

CLAIMS

1. A radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, comprising:

10 an extractor that extracts a signal expressed with the first propagation coefficient and a signal expressed with the second propagation coefficient from the reception signals; and

15 an adder that performs in-phase additions of the extracted signals.

2. The radio reception apparatus according to claim 1, wherein the extractor comprising:

20 a sorter that sorts the reception signals into two groups corresponding to a symbol pattern of the second signal so that a repetition cycle of signals comprising +A symbol of the first signal and +A symbol of the second signal is equal to a repetition cycle of signals comprising +A symbol of the first signal and -A symbol of the second signal; and

25 a separator that separates the reception signal into the signals each expressed with the first propagation coefficient and the signals each expressed with the second propagation coefficient by calculating a sum of and

difference between the signal sorted as one group and the signal sorted as the other.

3. The radio reception apparatus according to claim 1,

5 further comprising:

a storage that temporarily stores the reception signals; and

a despreader that performs despreading processing on the same reception signal stored in the storage using

10 spreading codes corresponding to a plurality of communication partners.

4. A radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted

15 +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, comprising:

20 a separator that separates the reception signals into a signal comprising +A symbol of the first signal and +A symbol of the second signal, and a signal comprising +A symbol of the first signal and -A symbol of the second signal; and

25 an adder that performs in-phase additions of the respective separated signals.

5. The radio reception apparatus according to claim 4,

further comprising:

a storage that temporarily stores the reception signals; and

5 a despreader that performs despreading processing on the same reception signal stored in the storage using spreading codes corresponding to a plurality of communication partners.

6. A radio reception apparatus that receives signals each

10 having a first signal comprising only a no sign-inverted $+A$ symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted $+A$ symbol and a sign-inverted $-A$ symbol sent through a propagation path with a second propagation coefficient, comprising:

15 a receiver that receives a third signal comprising $+A$ symbol of the first signal and $+A$ symbol of the second signal and a fourth signal comprising $+A$ symbol of the first signal and $-A$ symbol of the second signal among 20 the reception signals by alternating the third signals and the fourth signals, by a plurality of symbols each at predetermined intervals; and

25 an adder that performs in-phase additions of the third signals and in-phase additions of the fourth signals.

7. The radio reception apparatus according to claim 6, further comprising:

a storage that temporarily stores the reception signals: and

a despreader that performs despreading processing on the same reception signal stored in the storage using spreading codes corresponding to a plurality of communication partners.

8. The radio reception apparatus according to claim 6,
wherein the adder performs no in-phase addition of symbols
10 on the different sides of a frame boundary.

9. A communication terminal apparatus equipped with a radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

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20 an extractor that extracts a signal expressed with
the first propagation coefficient and a signal expressed
with the second propagation coefficient from the
reception signals; and

an adder that performs in-phase additions of the extracted signals.

10. A communication terminal apparatus equipped with a radio reception apparatus that receives signals each

having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol

5 sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

 a separator that separates the reception signals into a signal comprising +A symbol of the first signal and +A symbol of the second signal, and a signal comprising 10 +A symbol of the first signal and -A symbol of the second signal; and

 an adder that performs in-phase additions of the respective separated signals.

15 11. A communication terminal apparatus equipped with a radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

20 a receiver that receives a third signal comprising +A symbol of the first signal and +A symbol of the second signal and a fourth signal comprising +A symbol of the first signal and -A symbol of the second signal among the reception signals by alternating the third signals 25 and the fourth signals, by a plurality of symbols each

at predetermined intervals; and

an adder that performs in-phase additions of the third signals and in-phase additions of the fourth signals.

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12. A base station apparatus equipped with a radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

an extractor that extracts a signal expressed with the first propagation coefficient and a signal expressed with the second propagation coefficient from the reception signals; and

an adder that performs in-phase additions of the extracted signals.

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13. A base station apparatus equipped with a radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

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a separator that separates the reception signals into a signal comprising $+A$ symbol of the first signal and $+A$ symbol of the second signal, and a signal comprising $+A$ symbol of the first signal and $-A$ symbol of the second signal; and

an adder that performs in-phase additions of the respective separated signals.

14. A base station apparatus equipped with a radio reception apparatus that receives signals each having a first signal comprising only a no sign-inverted $+A$ symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted $+A$ symbol and a sign-inverted $-A$ symbol sent through a propagation path with a second propagation coefficient, said radio reception apparatus comprising:

20 a receiver that receives a third signal comprising $+A$ symbol of the first signal and $+A$ symbol of the second signal and a fourth signal comprising $+A$ symbol of the first signal and $-A$ symbol of the second signal among the reception signals by alternating the third signals and the fourth signals, by a plurality of symbols each at predetermined intervals; and

25 an adder that performs in-phase additions of the third signals and in-phase additions of the fourth signals.

15. A radio reception method for receiving signals each

having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, comprising:

an extracting step of extracting a signal expressed with the first propagation coefficient and a signal expressed with the second propagation coefficient from the reception signals; and

an adding step of performing in-phase additions of the extracted signals.

16. A radio reception method for receiving signals each having a first signal comprising only a no sign-inverted +A symbol sent through a propagation path with a first propagation coefficient and a second signal comprising a no sign-inverted +A symbol and a sign-inverted -A symbol sent through a propagation path with a second propagation coefficient, comprising:

a separating step of separating the reception signals into a signal comprising +A symbol of the first signal and +A symbol of the second signal, and a signal comprising +A symbol of the first signal and -A symbol of the second signal; and

an adding step of performing in-phase additions of the respective separated signals.

17. A radio reception method for receiving signals each having a first signal comprising only a no sign-inverted $+A$ symbol sent through a propagation path with a first propagation coefficient and a second signal comprising 5 a no sign-inverted $+A$ symbol and a sign-inverted $-A$ symbol sent through a propagation path with a second propagation coefficient, comprising:

a receiving step of receiving a third signal comprising $+A$ symbol of the first signal and $+A$ symbol 10 of the second signal and a fourth signal comprising $+A$ symbol of the first signal and $-A$ symbol of the second signal among the reception signals by alternating the third signals and the fourth signals, by a plurality of symbols each at predetermined intervals; and

15 an adding step of performing in-phase additions of the third signals and in-phase additions of the fourth signals.